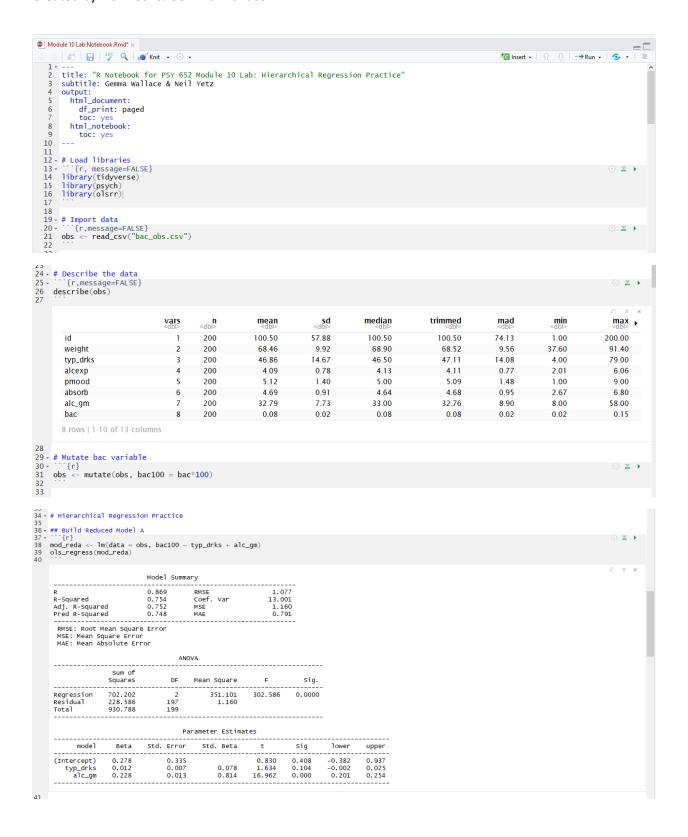
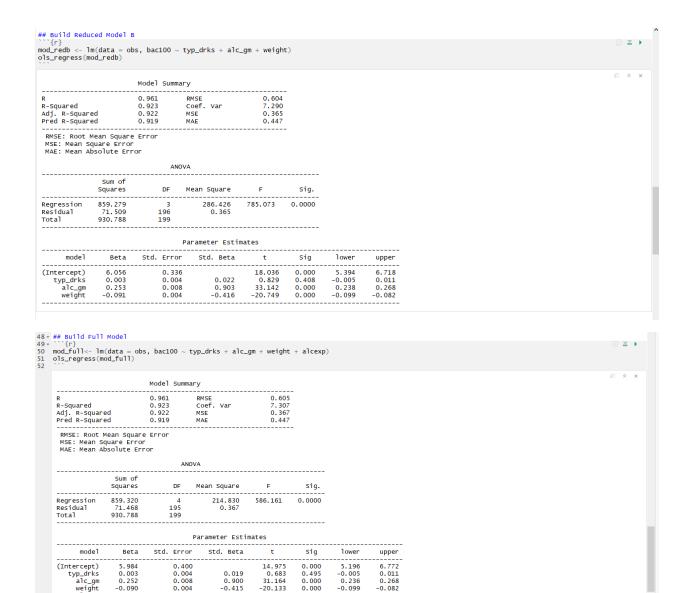
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0.024

53



In the white space below, calculate and interpret the unique variance in Y explained by each added predictor. (Hint: think of semi-partial correlation for your interpretations)

Moving from Reduced Model A to Reduced model B increased the R² value from .754 to .923. This means that weight adds 16.9% in explained variance in the outcome of BAC. Moving from Model B to Model C resulted in no change in the R². This means that alcexp explains very little variance in BAC.

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```
54 * ## Compare Reduced and Full Models
55
56 * ### Statistically compare model fit
57 * ``{r}
58 anova(mod_reda, mod_redb, mod_full, test = "F")
59 # list the most reduced model first, followed by the second-most reduced model, followed by the full model

Analysis of Variance Table

Model 1: bac100 ~ typ_drks + alc_gm
Model 2: bac100 ~ typ_drks + alc_gm + weight
Model 3: bac100 ~ typ_drks + alc_gm + weight + alcexp
Res.Df RSS Df Sum of Sq F Pr(>F)
1 197 228.586
2 196 71.509 1 157.077 428.5826 <2e-16 ***
3 195 71.468 1 0.041 0.1106 0.7398
---
signif. codes: 0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```

- i. In the white space below, interpret the partial F-test output and answer the following questions.
 - Does adding the weight variable result in a model that explains significantly more variance in bac100 than Reduced Model A (compare Reduced Model A and Reduced Model B)?
 - **a.** Yes, Model B explains a statistically significant amount more variance in BAC than model B.
 - 2. Does adding the alc_exp variable result in a model that explains significantly more variance in bac100 than Reduced Model B (compare Reduced Model B & Full Model)?
 - a. No, Model C does NOT explain any more variance in BAC than Model C.
 - 3. Reflect on your own research interests and write 2-3 sentences describing an example of when using hierarchical regression could be a good fit for your research. When might you actually use this?